

BIOANALYTICAL ASSAY LIST

GLP Bioanalytical Validated Methods (February 2010)

Drug*	Biological Matrix	Analytical Technique	Calibration Range	Internal Standard
25-hydroxyvitamin D3	Monkey Serum	LC/MS/MS	10-1000 ng/mL	d ₆ -25-hydroxyvitamin D3
25-hydroxyvitamin D3	Rat Serum	LC/MS/MS	2 – 100 ng/mL	d ₆ -25-hydroxyvitamin D3
Acyclovir / Valacyclovir	Human Plasma	LC/MS/MS	20 – 8000 ng/mL 10 – 600 ng/mL	Gancyclovir
Alendronate	Human Urine	LC/MS/MS	1 – 1000 ng/mL	d ₆ -Alendronic acid
Amphetamine / Lisdexamfetamine	Human Plasma	LC/MS/MS	1 – 200 ng/mL 0.5 – 100 ng/mL	d ₈ -amphetamine / d ₃ -lisdexamfetamine
Anastrozole	Human Plasma	LC/MS/MS	0.1 – 20 ng/mL	d ₁₂ -Anastrozole
Armodafinil	Human Plasma	LC/MS/MS	100 – 15,000 ng/mL	d ₅ -R-modafinil
Atovaquone	Human Plasma	LC/MS/MS	2-2000 ng/mL	Atovaquone-d5
Atorvastatin / ortho-Hydroxy Atorvastatin / para-Hydroxy Atorvastatin	Human Plasma	LC/MS/MS	0.2 – 100 ng/mL 0.2 – 100 ng/mL 0.2 – 100 ng/mL	d ₅ -Atorvastatin/ d ₅ -ortho-OH-Atorvastatin/ d ₅ -para-OH-Atorvastatin/
Azacitidine	Human Plasma	LC/MS/MS	5 – 1000 ng/mL	Aza-2'-deoxycytidine
Azathioprine / 6-Mercaptopurine	Human Plasma	LC/MS/MS	0.4 – 50 ng/mL 0.4 – 50 ng/mL	Acyclovir
Benazepril / Benazeprilat / Hydrochlorothiazide	Human Plasma	LC/MSD	2 – 750 ng/mL 4 – 750 ng/mL 5 – 500 ng/mL	Quinaprilat Monohydrate/ Trichlormethiazide
Bicalutamide	Human Plasma	LC/MS/MS	10-1250 ng/mL	d ₄ -Bicalutamide
Budesonide / 6β-hydroxybudesonide / 16α-hydroxyprednisolone	Human Plasma	LC/MS/MS	0.1 – 10 ng/mL 0.5 – 50 ng/mL 1 – 100 ng/mL	d ₈ -Budesonide
Cabergoline	Human Plasma	LC/MS/MS	0.5 – 50 pg/mL	d _x -Dihydrocabergoline
Calcifediol	Monkey Serum	LC/MS/MS	10-1000 ng/mL	d ₆ -25-hydroxyvitamin D3
Calcifediol	Rat Serum	LC/MS/MS	2 – 100 ng/mL	d ₆ -25-hydroxyvitamin D3
Cholecalciferol	Human Plasma	LC/MS/MS	0.25 – 25 ng/mL	d ₆ -Vitamin D3
Cholecalciferol	Human Plasma	LC/MS/MS	0.5 – 50 ng/mL	d ₆ -Vitamin D3
Cholecalciferol	Human Plasma	LC/MS/MS	2 – 75 ng/mL	d ₆ -Vitamin D3
Cefpodoxime	Dog Plasma	LC/MS/MS	0.1 – 50 ng/mL	Cefaclor
Ciprofloxacin	Human Plasma	LC/MS/MS	25 – 2000 ng/mL	d ₈ -Ciprofloxacin
Dapsone / N-Acetyl Dapsone	Human Plasma	LC/MS/MS	0.30 – 50 ng/mL 0.30 – 20 ng/mL	d ₄ -Dapsone
Dapsone / N-Hydroxylamine Dapsone / N-Acetyl Dapsone	Human Plasma	LC/MS/MS	0.30 – 50 ng/mL 0.30 – 20 ng/mL 0.30 – 20 ng/mL	d ₄ -Dapsone
Dapsone / N-Hydroxylamine Dapsone / N-Acetyl Dapsone	Human Urine	LC/MSD	0.50 – 10 µg/mL 0.05 – 1 µg/mL 0.25 – 5 µg/mL	d ₄ -Dapsone
Dapsone / N-Hydroxylamine Dapsone / N-Acetyl Dapsone	Rabbit Plasma	LC/MS/MS	1 – 1000 ng/mL 1 – 500 ng/mL 1 – 500 ng/mL	d ₄ -Dapsone
Dapsone / N-Hydroxylamine Dapsone / N-Acetyl Dapsone	Rat Plasma	LC/MS/MS	1 – 1000 ng/mL 1 – 500 ng/mL 1 – 500 ng/mL	d ₄ -Dapsone
Desglymidodrine	Dialysate	LC/MSD	0.14 – 4.81 ng/mL	Metoprolol

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Desmopressin	Human Plasma	LC/MS/MS	4 – 50 pg/mL	d ₈ -Desmopressin
Dextromethorphan / Midazolam	Human Plasma	LC/MS/MS	0.1 – 100 ng/mL 0.1 – 100 ng/mL	d ₃ -Dextromethorphan
Diclofenac / Lidocaine	Porcine Plasma	LC/MS/MS	0.5 – 100 ng/mL 0.1 – 20 ng/mL	d ₄ -Diclofenac/ d ₆ -Lidocaine
Diethylpropion	Human Plasma	LC/MS/MS	1 – 1000 ng/mL	d ₁₀ -Diethylpropion HCl
Docetaxel	Human Plasma	LC/MS/MS	5 – 5000 ng/mL	Paclitaxel
Donepezil	Human Plasma	LC/MSD	0.5 – 100 ng/mL	d ₇ -Donepezil
Doxylamine	Human Plasma	LC-MS/MS	0.5-50 ng/mL	d ₅ -Doxylamine
Fenofibrate	Human Plasma	LC/MS/MS	10 – 5000 ng/mL	d ₆ -Fenofibric acid
Fexofenadine	Human Plasma	LC/MSD	1 – 600 ng/mL	d ₆ -Fexofenadine
Fexofenadine / Pseudoephedrine	Human Plasma	LC/MSD	1 – 400 ng/mL 2 – 400 ng/mL	d ₃ -Ephedrine/ d ₆ -Fexofenadine
Fluoxetine	Human Plasma	LC/MS/MS	0.1 – 15 ng/mL	d ₅ -Fluoxetine
Fluticasone Propionate	Human Plasma	LC/MS/MS	3 – 600 pg/mL	d ₃ -Fluticasone
Formoterol fumarate	Human Plasma	LC/MS/MS	2 – 25 pg/mL	d ₆ -Formoterol
Gabapentin	Human Plasma	LC/MS/MS	10 – 10000 ng/mL	Pregabalin
Gemcitabine	Human Plasma	LC/MS/MS	200 – 30000 ng/mL	Floxuridine
Ibandronate	Human Plasma	LC/MS/MS	1 – 100 ng/mL	d ₃ -Ibandronic Acid
Lamotrigine	Human Plasma	LC/MS/MS	25 – 5000 ng/mL	¹³ C ₃ -Lamotrigine
Leflunomide / A77 1726 Leflunomide Metabolite	Human Plasma	LC/MSD	0.2 – 12 ng/mL 100 – 12000 ng/mL	¹³ C ₄ -Leflunomide
Levetiracetam	Human Plasma	LC/MS/MS	100 – 25000 ng/mL	d ₅ -Levetiracetam
Lidocaine	Human Plasma	LC/MS/MS	0.1 – 100 ng/mL	d ₆ -lidocaine
Lisdexamfetamine / Amphetamine	Human Plasma	LC/MS/MS	0.5 – 100 ng/mL 1 – 200 ng/mL	d ₃ -lisdexamfetamine / d ₈ -amphetamine
Methylphenidate	Human Plasma	LC/MS/MS	0.1 – 100 ng/mL 0.1 – 50 ng/mL	d ₉ -Methylphenidate
Modafinil	Human Plasma	LC/MSD	0.1 – 15 µg/mL	Trichlormethiazide
R-modafinil	Human Plasma	LC/MS/MS	100 – 15,000 ng/mL	d ₅ -R-modafinil
Monensin	Bovine Plasma	LC/MS/MS	0.05 – 5 ng/mL	Salinomycin
Morphine / Morphine 3D-glucuronide (M3G) Morphine 6D-glucuronide (M6G)	Human Plasma	LC/MS/MS	0.5 – 50 ng/mL 10 – 1000 ng/mL 1 – 100 ng/mL	d ₃ -Morphine d ₃ -M3G d ₃ -M6G
Nateglinide	Human Plasma	LC/MS/MS	100 – 10000 ng/mL	d ₅ -Nateglinide
Niacin and Nicotinuric Acid	Human Plasma	LC/MS/MS	0.5 – 700 ng/mL 20 – 4000 ng/mL 10 – 2000 ng/mL	D ₄ -Niacin
Niacin and Nicotinuric Acid	Human Plasma	LC/MS/MS	0.5 – 700 ng/mL 0.5 – 105 ng/mL	D ₄ -Niacin
Nilotinib	Human Plasma	LC/MS/MS	5 – 1500 ng/mL	d ₃ -Nilotinib
Nitrazepam	Human Plasma	LC/MSD	0.25 – 100 ng/mL	d ₅ -Nitrazepam
Nitroglycerin / 1,2-dinitroglycerin / 1,3-dinitroglycerin	Human Plasma	LC/MS/MS	20 – 2000 pg/mL 50 – 5000 pg/mL 50 – 5000 pg/mL	Nitroglycerin- ¹⁵ N ₃ 1,2,4-Butanetriol-1,4-dinitrate

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GLP Bioanalytical Validated Methods (February 2010) - continued				
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Olanzapine	Human Plasma	LC/MSD	0.2 – 40 ng/mL	d ₅ -Nitrazepam
Olanzapine	Human Plasma	LC/MS/MS	0.1-15 ng/mL	d ₃ -Olanzapine
Ondansetron	Human Plasma	LC/MS/MS	0.4 – 300 ng/mL	Tropisetron
Oxcarbazepine / 10, 11-dihydro-10-hydroxycarbamazepine (MHD)	Human Plasma	LC/MS/MS	20 – 5000 ng/mL 200 – 12000 ng/mL	d ₄ -Oxcarbazepine
Oxycodone / Noroxycodone / Oxymorphone	Human Plasma	LC/MS/MS	0.5 – 100 ng/mL 0.25 – 50 ng/mL 0.025 – 5 ng/mL	d ₃ -Noroxycodone d ₃ -Noroxycodone d ₃ -Oxymorphone
Paclitaxel	Human Plasma	LC/MS/MS	5 – 5000 ng/mL	Docetaxel
Paliperidone	Human Plasma	LC/MS/MS	0.050-10.0 ng/mL	d ₄ -Risperidone
Penciclovir	Human Plasma	LC/MS/MS	20 – 5000 ng/mL	d ₄ -Penciclovir
Phentermine / Topiramate	Human Plasma	LC/MS/MS	0.2 – 30 ng/mL 5 – 750 ng/mL	d ₁₂ -Topiramate / d ₈ -Amphetamine
Pregabalin	Human Plasma	LC/MS/MS	10 – 10000 ng/mL	Gabapentin
Proguanil / Cycloguanil / 1-(4-Chlorophenyl) biguanide	Human Plasma	LC/MS/MS	0.2-200/0.5-100/ 0.2-50 ng/mL	d ₆ -Proguanil
Pseudoephedrine	Human Plasma	LC/MS/MS	2 – 500 ng/mL	d ₃ -Pseudoephedrine
Quinapril / Quinaprilat	Human Plasma	LC/MSD	4 – 450 ng/mL 10 – 1500 ng/mL	Enalapril Maleate
Raloxifene	Human Plasma	LC/MS/MS	5 – 1000 pg/mL	d ₄ -Raloxifene
Paclitaxel	Human Plasma	LC/MS/MS	5 – 5000 ng/mL	Docetaxel
Paliperidone	Human Plasma	LC/MS/MS	0.050-10.0 ng/mL	d ₄ -Risperidone
Penciclovir	Human Plasma	LC/MS/MS	20 – 5000 ng/mL	d ₄ -Penciclovir
Ribavirin	Human Plasma	LC/MS/MS	10 – 5000 ng/mL	Mizoribine
Rifaximin**	Human Plasma	LC/MS/MS	0.1 – 10 ng/mL	Rifampicin
Rifaximin**	Human Plasma	LC/MS/MS	0.1 – 20 ng/mL	Rifampicin
Risperidone / 9-OH-Risperidone	Human Plasma	LC/MS/MS	0.1 – 25 ng/mL 0.1 – 25 ng/mL	d ₄ -Risperidone
Rivastigmine / NAP 226-90	Human Plasma	LC/MS/MS	5 – 500 pg/mL 5 – 500 pg/mL	d ₄ -Rivastigmine
Rivastigmine / NAP 226-90	Human Plasma	LC/MS/MS	0.1 - 10 ng/mL 0.05 - 5 ng/mL	d ₄ -Rivastigmine
Rivastigmine / NAP 226-90	Human Plasma	LC-MS/MS	0.05 - 12.5 ng/mL 0.025 - 6.25 ng/mL	d ₄ -Rivastigmine
Saquinavir	Human Plasma	LC/MSD	20 – 25000 ng/mL	d ₅ -Saquinavir
Scopolamine	Human Plasma	LC/MS/MS	2 – 2000 pg/mL	d ₃ -Scopolamine HBr
Sertraline / Norsertaline	Human Plasma	LC/MSD	0.25 – 60 ng/mL 0.5 – 30 ng/mL	d ₃ -sertraline
Sertraline	Human Plasma	LC/MS/MS	0.25 – 100 ng/mL	d ₃ -sertraline
Sulfamethoxazole / Trimethoprim	Human Plasma	LC/MSD	10 – 100 ng/mL 10 – 800 ng/mL	Pyrimethamine Sulfisoxazole
Topiramate / Phentermine	Human Plasma	LC/MS/MS	5 – 750 ng/mL 0.2 – 30 ng/mL	d ₈ -Amphetamine / d ₁₂ -Topiramate

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**Limited Availability.

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GLP Bioanalytical Validated Methods (February 2010) - continued				
Drug*	Biological Matrix	Analytical Technique	Calibration Range	Internal Standard
Tramadol / O-desmethyltramadol	Human Plasma	LC/MS/MS	2-400 ng/mL 0.5-100 ng/mL	Tramadol-13C, -D3
Tranexamic Acid	Human Plasma	LC/MS/MS	50-10,000 ng/mL	cis-4-Aminocyclohexane- carboxylic acid
Trimethoprim / Sulfamethoxazole	Human Plasma	LC/MS/MS	10 – 800 ng/mL 10 – 100 ng/mL	Sulfisoxazole Pyrimethamine
Valacyclovir / Acyclovir	Human Plasma	LC/MS/MS	10 – 600 ng/mL 20 – 8000 ng/mL	Gancyclovir
Venlafaxine and 4 metabolites (deuterated)	Rat Plasma	LC/MS/MS	1 – 1000 ng/mL	Venlafaxine and its metabolites
Venlafaxine and 4 metabolites (deuterated)	Dog Plasma	LC/MS/MS	1 – 1000 ng/mL	Venlafaxine and its metabolites
Verapamil / Norverapamil	Human Plasma	LC/MS/MS	1 – 500 ng/mL	d ₆ -Verapamil d ₆ -Norverapamil
Vitamin D3	Human Plasma	LC/MS/MS	0.25 – 25 ng/mL	d ₆ -Vitamin D3
Vitamin D3	Human Plasma	LC/MS/MS	0.5 – 50 ng/mL	d ₆ -Vitamin D3
Vitamin D3	Human Plasma	LC/MS/MS	2 – 75 ng/mL	d ₆ -Vitamin D3
Voriconazole	Human Plasma	LC/MS/MS	10 – 1500 ng/mL	d ₃ -Voriconazole

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Bioanalytical Methods Developed (February 2010)		
Drug*	Biological Matrix	Analytical Technique
1,25-Dihydroxyvitamin D2	Human Plasma	LC/MS/MS
25-Hydroxyvitamin D2	Human Plasma	LC/MS/MS
Aspirin / Dipyridamole	Human Plasma	LC/MS/MS
Bupropion and Hydroxy-bupropion	Human Plasma	LC/MS/MS
Codeine	Human Plasma	LC/MS/MS
Dexlansoprazole	Human Plasma	LC/MS/MS
Dipyridamole / Aspirin	Human Plasma	LC/MS/MS
Doxercalciferol	Human Plasma	LC/MS/MS
Entecavir	Human Plasma	LC/MS/MS
Ergocalciferol	Human Plasma	LC/MS/MS
Ethinyl Estradiol	Human Plasma	LC/MS/MS
Floxuridine	Human Plasma	LC/MS/MS
Fluvoxamine	Human Plasma	LC/MS/MS
Lansoprazole	Human Plasma	LC/MS/MS
Lenalidomide	Human Plasma	LC/MS/MS
Methotrexate	Human Plasma	LC/MS/MS
Midazolam and metabolites	Human Plasma	LC/MS/MS
Omega-3 Ethyl Esters	Serum Phospholipid	GC/FID
Oxybutynin	Human Plasma	LC/MS/MS
16- α -prednisolone	Human Urine	LC/MS/MS
Pyridoxine	Human Plasma	LC/MS/MS
Risedronate	Human Plasma	LC/MS/MS
Salinomycin	Bovine Plasma	LC/MS/MS

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Bioanalytical Methods Under Development (February 2010)		
Drug*	Biological Matrix	Analytical Technique
5-aminosalicylic acid	Human Plasma	LC/MS/MS
Aspirin / Dipyridamole	Human Plasma	LC/MS/MS
Calcitriol	Monkey Serum	LC/MS/MS
Calcitriol	Rat Serum	LC/MS/MS
Carbuterol	Human Plasma	LC/MS/MS
Dexlansoprazole	Human Plasma	LC/MS/MS
Entecavir	Human Plasma	LC/MS/MS
Etravirine	Human Plasma	LC/MS/MS
Fentanyl	Human Plasma	LC/MS/MS
Ferric Fumarate (Total Iron and Total Bound Iron)	Human Plasma	ICP/MS
Hydrocodone	Human Plasma	LC/MS/MS
Hydromorphone	Human Plasma	LC/MS/MS
Imatinib	Human Plasma	LC/MS/MS
Lansoprazole	Human Plasma	LC/MS/MS
Mecamylamine	Human Plasma	LC/MS/MS
Memantine	Human Plasma	LC/MS/MS
Mesalamine (Mesalazine, 5-ASA)	Human Plasma	LC/MS/MS
Neridronate	Human Plasma	LC/MS/MS
Nicotinamide	Human Plasma	LC/MS/MS
Omeprazole	Human Plasma	LC/MS/MS
Pantoprazole	Human Plasma	LC/MS/MS
Progesterone	Human Plasma	LC/MS/MS
Quetiapine	Human Plasma	LC/MS/MS
Rapamycin	Human Plasma	LC-MS/MS
Sildenafil	Human Plasma	LC/MS/MS
Strontium Ranelate	Human Plasma	ICP/MS
Telmisartan	Human Plasma	LC/MS/MS

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